ABSOLUTE ROTARY ENCODER
PROFIBUS-DP

Main Features

- Compact and heavy-duty industrial model
- Certified: By Profibus Trade Org., CE
- Interface: Profibus-DP
- Housing: 58 mm ∅
- Shaft: 6 or 10 mm ∅
- Resolution: Max. 25 Bit = 33,554,432
  steps over 4,096 revolutions
- Code: Binary

Programmable Parameters

- Direction of rotation (complement)
- Resolution per revolution
- Total resolution
- Preset value
- Output of velocity
- Time base for velocity
- Software Limit Switches

Mechanical Structure

- Flange and housing of Aluminum
- Shaft of stainless steel
- Precision ball bearings with sealing or cover rings
- Code disc made of unbreakable and durable plastic

Electrical Features

- status indication with two LEDs in the connection cap
- parameters are saved in a non-volatile memory
- Temperature insensitive IR-opto-receiver-array
- Polarity inversion protection
- Over-voltage-peak protection
- 4 billion write cycles

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Technical Data

Electrical Data

Supply voltage	10 - 30 V DC (absolute limits)
Power consumption	Max. 3.5 Watt
EMC	EN 50081-2, EN 50082-2
Bus connection	Line-driver according to RS 485
	Galvanically isolated by opto-couplers
Transmission rate	Max. 12 MBaud
Accuracy of division	$\pm$ ½ LSB
Step frequency LSB	Max. 100 kHz (valid code)
Electrical lifetime	> 10^5 h
Device addressing	Programmable by rotary switches in connection cap

Mechanical Data

Housing	Aluminum	
Lifetime	> 10^5 h at 1,000 rpm	
Inertia of rotor	$\approx$ 50 gcm^2	
RPM	Max. 6,000 (continuously)	
Shock (IEC 68-2-27)	$\leq$ 200 m/s^2 (12 ms)	
Vibration (IEC 68-2-6)	$\leq$ 100 m/s^2 (10 Hz ... 1,000 Hz)	
Weight, single-turn	$\approx$ 500 g	
Weight, multi-turn	$\approx$ 700 g	
Shaft loading	Axial 20 N, radial 110 N	
Friction torque	$\leq$ 5 Ncm	
Flange	**Synchro (Y)**	**Clamp (F), synchro (Z)**
Shaft diameter	6 mm	10 mm
Shaft length	10 mm	20 mm

Environmental Conditions

|	
Operating temperature	0 ... + 70 °C
Storage temperature	- 40 ... + 85 °C
Humidity	98 % (without liquid state)
Protection class (EN 60529)	
Casing side	IP 65
Shaft side	IP 65*

* up to 0.5 bar

ABSOLUTE ROTARY ENCODER
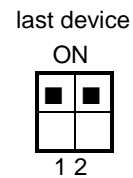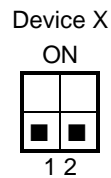# PROFIBUS-DP

Schnittstelle

Installation

The rotary encoder is connected by two or three cables depending on whether the power supply is integrated into the bus cable or connected separately. If the power supply is integrated into the bus cable, one of the cable glands can be fitted with a plug.
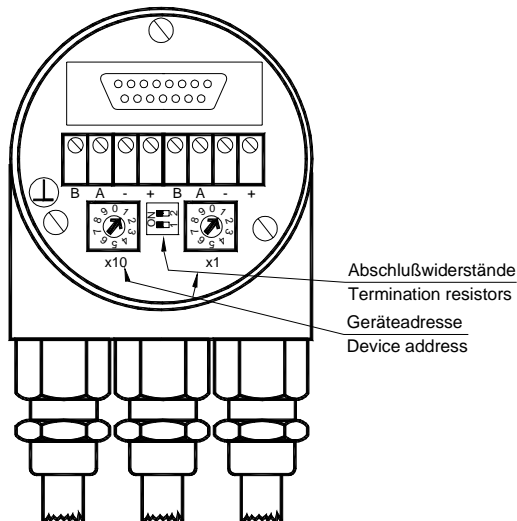
Termination resistors are integrated in the connection cap. These must be switched on if the encoder is connected at the end or the beginning of the bus.

Termination Resistors:

The settings of the Profibus-DP device address is done by user-friendly rotary switches in the connection cap. Allowed addresses are between 1 and 99, and each can only be used once. The connection cap can easily be opened for installation by removing the two cap screws.

GSD-files are necessary for installing the encoder. The disc with the GSD-file and the detailed user manual can be ordered from FRABA.

Abschlußwiderstände
Termination resistors
Geräteadresse
Device address

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Interface

Programmable Parameters

The Profibus-DP interface supports the encoder profile* according to CLASS 1 and CLASS 2 of Profibus-DP. In addition to these functions the GSD-file supports new features, for example software limit switches. Further more, the following encoder parameters can be programmed directly via the Profibus-DP network without any extra device:

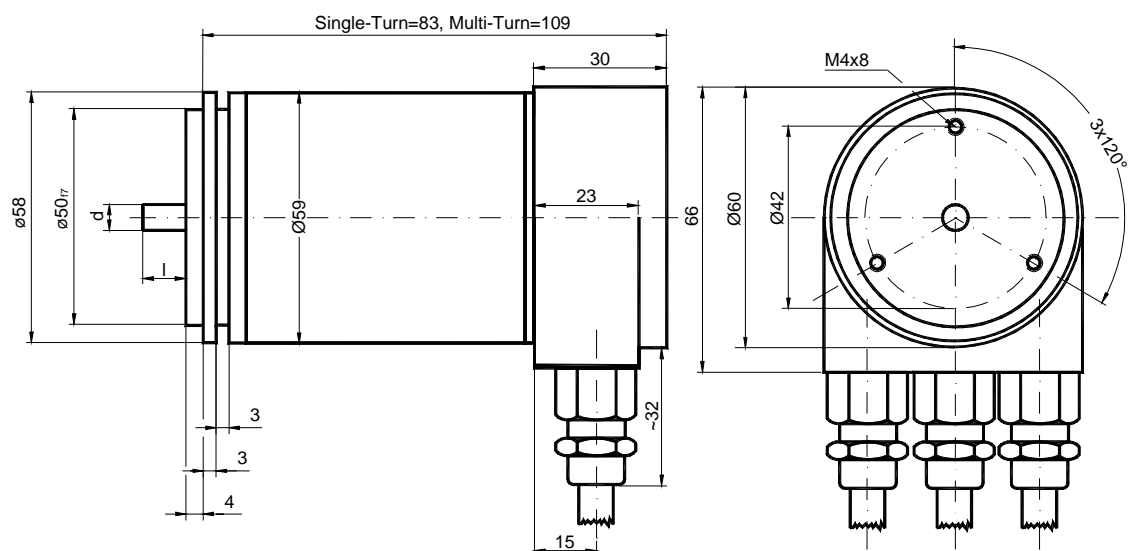|	
Counting Direction	As operating parameters the code sequence (complement) can be programmed. This parameter determines the counting direction, in which the output code increases or decreases.
Resolution per Revolution	The parameter 'resolution per revolution' is used to program the desired number of steps per revolution. Each value between 1 and 4,096 can be programmed.
Total Resolution	This parameter is used to program the desired number of measuring units over the total measuring range. This value may not exceed the total physical resolution of the absolute rotary encoder.
Preset Value	The preset value is the desired position value, which should be reached at a certain physical position of the axis. The position value is set to the desired process value by the parameter preset.
Velocity	The implemented software can additionally deliver the current velocity. This value is given in binary code, 16 Bit, after the process value. It is possible to choose between four different units: steps per 10 ms, per 100 ms, per 1000 ms and revolutions per minute.
Software limit switches function	Two software limit switches can be set. If these values are exceeded or if they fall below a bit in the output word is set.
Teach-in (Online parameterization)	A special mode is available for commissioning phase of the equipment. This makes it possible to change parameters while the encoder is transferring data. For continuous operation another mode is available in which the parameters are protected against unintentional changes.

* The Profibus-DP profile for encoder can be ordered by the Profibus Nutzerorganisation e.V., Haid und Neu-Str. 7, D-76131 Karlsruhe, Germany with Order-No. 3.062.

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Mechanical Drawings

Synchro Flange (Y,Z)

The only difference between the Y- and Z-Flange is the shaft size (refer to the table besides).

	d [mm]	l [mm]
Y-Flange	6_{f6}	10
Z-Flange	10_{h8}	20

Single-Turn=83, Multi-Turn=109

30

M4x8

3x120°

23

66

Ø58

Ø50$_{I7}$

Ø59

Ø60

Ø42

d

l

3

3

4

~32

15

Clamp Flange (F)

30

Single-Turn=83, Multi-Turn=109

30

M4x8

3x120°

10

18

23

66

1

Ø58

Ø52

Ø36$_{I7}$

Ø10$_{h8}$

Ø59

Ø60

Ø48

3

3

~32

15

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Models/Ordering Description

Description	Type Key								
Absolute rotary encoder	**AWC**	**58**	. . -	. . . . -	.	B	A1	DP	.	3PG
Diameter in mm									
Steps per revolution	4096	**12**							
	8192	13							
No. of revolutions	1		**1**						
	4096		**4096**						
Flange	Clamp Flange (Shaft = 10 mm ∅) **F**								
	Synchro Flange (Shaft = 6 mm **Y**								
	Synchro Flange (Shaft = 10 mm Z								
Code	Binary				**B**				
Version							**A1**		
Interface	Profibus-DP programmable acc. Class 2							**DP**	
Options	Without								**0**
	Shaft sealing (not possible for Z-Flange)								W
	Stainless steel configuration (flange, housing, cap)								Q
Connection	Connection Cap (see Accessories) *1)								**3PG**

*1) The connection cap must be ordered seperately !

Further models on request

Accessories and Documentation

Description		Type
Connection cap*1)	T-coupling-functionality with integrated address setting is necessary to use the encoder	
	Standard	AH 58-A1DP-3PG
	Stainless steel configuration	AH 58-A1DP-3PG-VA
Shaft coupling	Drilling: 10 mm	GS 10
	Drilling: 6 mm	GS 06
Type File GSD*2)	Floppy disc with type file GSD, is only necessary if FRABA rotary encoder are used for the first time	DK-D2
Clamp disc	4 pcs. / AWC	SP 15
Clamp ring	2 pcs. / AWC	SP H
User manual*2)	Installation and configuration manual for Profibus, English	UME-A1DP
User manual*2)	Installation and configuration manual for Profibus, German	UMD-A1DP

*2) These can be downloaded free of charge from our homepage www.posital.de.

We do not assume responsibility for technical inaccuracies or omissions. Specifications are subject to change without notice.